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ABSTRACT

The literature reviewed here indicates that school planners, aware of the growing demand for vocational education facilities, are developing a variety of new approaches. The development of educational specifications and the needs of the local community are major concerns of facilities planners. Several of the documents reviewed discuss specialized facilities that have been developed to house programs in areas as diverse as agricultural education and electrical technology. All except one of the documents reviewed have been previously announced in RIE. (Author/EA)

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Vocational Education Facilities

Sharon Counts Johnson

> Schools are coming more and more to be recognized as service agencies for an entire community. This attitude presents some rather interesting implications for the industrial education program if it is to be consistent with educational and community goals. It would seem to mean that school shops should be planned in a manner which provides flexibility and adaptability of space and equipment so that it will be versatile over a wide range of instructional activities.
>
> *Michigan State Department of Public Instruction 1964*

With a large number of high school students electing not to continue on to college and a correspondingly large number of adults returning to school for career retraining, educators face complicated demands on existing and projected vocational training facilities. The Vocational Education Act of 1963 and its 1968 amendments authorize the use of funds for the construction of area vocational education school facilities. The impetus for growth provided by this act, combined with industrial diversification and automation requirements for a wider range of job skills, demand that today's vocational education facilities be well planned and versatile.

In the literature, two concepts appear repeatedly as necessary for planning viable vocational education facilities. First, to accommodate the wide range of activities in the vocational education curriculum, flexibility of space, equipment, and utilities is essential. Second, there is the need for adaptability of facilities to meet the evolving demands of technology. Without these capabilities, vocational education facilities may prove inadequate for present needs and future demands.

The literature reviewed here indicates school planners, aware of the growing demand for vocational education facilities, are developing a variety of new approaches. The development of educational specifications is a major concern of facilities planners, and the needs of the local community should be an integral part of these plans. Several of the documents discuss specialized facilities that have been developed to house programs in areas as diverse as agricultural education and electrical technology. The kinds of facilities constructed will play an important role in creating the proper environment for the development and evolution of vocational education so that it can meet the demands of a changing society.

All except one of the documents reviewed are available from the ERIC Document Reproduction Service. Complete instructions for ordering the documents are given at the end of the review.

Increased Demand For Vocational Education Facilities

A document from the Office of Education ([1968]) notes an urgent demand for vocational training and retraining and a dramatic increase in the construction of area vocational schools. Despite increased construction, educators will be faced with a deficit of over one million student places by 1975, when anticipated enrollments will almost triple those of the present.

Along with the demand for area vocational education facilities, there is the need to accommodate evolving technological advances in industry. The document maintains that facilities must be flexible and adaptable to meet both requirements. In discussing the development of programs to meet these needs, the document examines the following areas: environmental standards, acoustical control, instructional staff, occupational clusters, libraries, facilities for the handicapped, storage facilities, and problems peculiar to large cities.

In a guidebook on the conception, planning, and implementation of vocational technical education facilities, Nerden ([1970]) quotes data indicating that only 15 to 18 percent of all young people who begin school complete their education with a bachelor's degree. The author notes that public secondary schools, as well as junior high and elementary schools, must provide at least 85 percent of the school population with occupational training.

The Michigan State Department of Public Instruction (1964) presents a bulletin on school shop planning to aid school administrators, teachers, and architects in developing new facilities or altering existing structures. The document discusses the preplanning of school shops and facilities, describes industrial arts laboratories for power mechanics, graphic arts, and electronics, and analyzes the major aspects of shop architecture.

In a comprehensive planning guide, Chase (1965) explains the implementation of the Vocational Education Act of 1963 and provides a checklist of steps for planning area or regional facilities. The author recommends that communities desiring to implement building programs first survey their area for program and building needs. Other considerations discussed include educational specifications, school construction costs, economies in planning facilities, and facilities planning terms.

Mochon (1969) points out that we are at

last emerging from the dark tunnel of the "trade school" and that the stigma attached to vocational training is being overcome by facilities based on the concept of "built-in pride." Career training facilities are now designed to motivate and encourage people to learn. Such intangible values and ideas are being transformed into solid educational innovations through the design of new facilities such as:

- the vocational-technical campus, with the "shopping-center" concept of glassed-in classrooms so that students can "window-shop" courses and develop interest in new areas
- the "resort" concept, a combined liberal arts and vocational-technical campus, where students may learn skills in an atmosphere similar to that of their chosen profession

PLANNING GUIDES DEVELOP EDUCATIONAL SPECIFICATIONS

Recent instructional trends are incorporated in a report by Meckley and others (1969) on the development of educational specifications for occupational preparation programs. The report discusses the development of a particular school's philosophy of education regarding program objectives, teaching activities, and learning activities, as preliminary steps in outlining facility requirements.

According to the authors, two important factors that influence facility requirements are (1) learning modes that include action, reaction, and interaction learning, and (2) specialized versus multiuse space for which lecture/demonstration areas, seminar areas, and laboratories must be considered. A major part of the document is in checklist format; a bibliography of eighty-nine references is included for more detailed treatment of facility planning.

Kishkunas (1966) suggests the adoption of methods from industry to provide vocational facilities that are flexible and adaptable to changing conditions. To implement interdisciplinary educational situations, the author recommends the intermixing of academic and vocational activities, with a systems approach to construction enabling the specification of building components to fulfill the needs of vocational activities. This eight-volume report contains discussions of:

- the changing world of work and solutions provided by better facilities
- ways to achieve flexibility through modularity
- a planning technique for space determination using computer simulation
- a hypothetical example of schematic modernization
- a planner's guide to the Pittsburg Building Code
- the results of a nationwide survey of state space standards in and space utilization in existing vocational rooms in Pittsburgh schools
- background information
- a summary of project goals and methodology

Gallington (1967) considers the problems of space layout and design of facilities for cooperative vocational education. Cooperative vocational curricular-patterned programs should be able to be adjusted or revised to meet the needs of unique offerings. The space needs for programs should incorporate space for: general instruction, small-group instruction, individual instruction and vocational counseling, general related reference material, specific or technical related reference material, and storage of instructional materials, exhibitions, and project work.

Valentine and Conrad (1967) report on the first phase of a project for developing a series of planning guides for vocational facilities. Specialists from the Center for Vocational and Technical Education, plant planners from the Educational Administration and Facilities Unit, representatives from the State Department of Education, local school officials, and architects met regularly during this phase to determine the overall direction of the series. Vocational-technical facility needs projections and a checklist of tentative criteria for evaluating a facility planning guide are included.

Trends and new approaches for planners of facilities and equipment in vocational education programs were developed at a five-day institute reported by Larson and Blake (1970). Task-force groups concluded that innovative planning, need-studies, open space planning, and production of good educational specifications need emphasis. Participant evaluations recommended holding biennial institutes dealing with fundamental facilities, focusing more research on the elements of facilities and equipment planning, and developing visual aids concerned with facility planning.

Nerden (1968) presents guidelines proposed by the Council of Educational Facility Planners for educational vocational facilities. The document's major content areas are:

- concepts of vocational-technical education
- groups served by vocational-technical education
- patterns of vocational-technical education
- facility planning considerations
- factors affecting design and usefulness
- facility support factors
- shops and laboratories

Nerden describes patterns of career training at the comprehensive area vocational schools, the combination secondary-post-secondary institutions, and the regional service center. Facility planning areas discussed include survey, site selection, community attitudes, types and levels of curriculum, and occupational analysis. Other chapters cover equipment selection, adaptability, supporting educational facilities, and the location, types, and sizes of shops and laboratories.

The Wisconsin State Board of Vocational and Adult Education (1964) provides specific information needed by local school districts for planning vocational education facilities from inception to dedication. In addition to covering seven steps in facility planning, a checklist and guideline standards are provided for building design considerations. The report discusses such areas as selection of an architect; federal labor standards; checklists for applicants, contractors, and state boards; construction costs; and Wisconsin construction laws.

FACILITIES FOR SPECIALIZED PROGRAMS

Schwalm (1969) reports on the successful use of transportable industrial arts learning laboratories. Four prefabricated mobile units housing specialized equipment were rotated among four junior high schools in this project. According to the author, students in the demonstration group showed great gains in tool usage, problem-solving abilities, consumer knowledge, and general social behavior. Teachers who received workshop sessions and guided practice in planning instructional sequences were judged generally improved. Recommendations include: (1) greater emphasis on consumer education and vocational guidance, (2)

extension of industrial arts to grade seven, (3) improvement in the status of industrial arts through improved instruction, and (4) continued use of the transportable units as a necessary functional part of the total program.

The Richmond Unified School District in California has a preparatory program designed to equip high school students for career education in a technical field. According to Plutte (1965), the underlying concepts of the Richmond Plan are: (1) the experiential, basically learner-centered, (2) the interdisciplinary, basically teacher-oriented, and (3) the motivational, influenced by all controlled environmental factors offering the optimum learning climate for both students and teachers.

These concepts demand facilities that encourage an interdisciplinary approach to technical training. The document gives educational space requirements for the entire pretechnology facility, the preengineering technology cluster, the paramedical services cluster, and the communicative arts technology cluster.

Adams (1969) provides specifications for educational facilities housing automotive servicing programs. Part 1 of his guidebook is a discussion of the major purpose, underlying assumptions, guiding principles, and recent trends used in the preparation of the guide. Part 2 provides data collection instruments covering basic program features, objectives, and kinds of programs. Data collection instruments covering facts relative to the actual desired space are discussed in part 3.

Colling and Farnsworth (1969) discuss educational specifications for facilities housing programs in laboratory animal science technology. Their guide is designed to help planners form creative solutions to housing educational programs, to prevent overlooking important considerations in the facility planning process, and to encourage logical and systematic facility planning.

The planning of educational facilities for electrical technology programs is discussed in a four-part guide by Sitterlee (1969). Part 1 discusses recent trends employed in the preparation of the guide. Data-collection instruments for basic electrical program features and objectives are covered in part 2. The last sections of the guidebook present data-collection instruments relative to the actual space desired in the facility, and an annotated bibliography of related items.

A document by the Florida State Department of Education (1968) presents guidelines for developing agricultural education facilities in senior high and post-high school settings. The organization of program objectives and curriculum are outlined. Discussion also focuses on relationships of instructional spaces, general and specific spatial requirements for agricultural programs, services and utilities, and environmental factors.

Meckley and others (n.d.) present guidelines encouraging the systematic and creative planning of home economics facilities, including a consideration of the kinds of teaching and learning activities that determine facility needs. Their manual provides rating scales to determine educational objectives and the major emphasis of the program, as well as program information forms assessing course content, group size, and mode and level of learning. A detailed description of the distinct spaces required by occupational preparation programs is supplemented with forms and checklists to facilitate the planning of lecture/demonstration, seminar, and laboratory areas. An annotated bibliography of reference sources

provides facility planning information.

Additional references to facilities planning for vocational education appear in the supplementary bibliography.

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RESEARCH HIGHLIGHTS

• Since only 15 to 18 percent of all young people who begin school complete their education with a bachelor's degree, public secondary schools—as well as junior high and elementary schools—must provide at least 85 percent of the school population with occupational training (Nerden [1970]).

• Communities desiring to build vocational education facilities should first survey their area for program and building needs (Chase 1965).

• The stigma attached to vocational training is being overcome by facilities based on the concept of "built-in pride" (Mochon 1969).

• Methods can be adopted from industry to provide vocational facilities that are flexible and adaptable to changing conditions (Kishkunas 1966).

• Students using transportable industrial arts learning laboratories showed great gains in tool usage, problem-solving abilities, consumer knowledge, and general social behavior (Schwalm 1969).

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